Overview of Housing Finance Instruments

Workshop on Maintaining Sustainable Mortgage
Finance Schemes In Africa
held in Accra, Ghana

December 1997

Sponsored by USAID South Africa

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for the
Research Triangle Institute
(RTI Task No. 6598-803)

Environmental and Urban Programs Support Project
Contract No.: PCE-1008-I-00-6005-00
Project No.: 940-1008
Contract Task Order No. 803
Sponsored by the Office of Environment and Urban Programs (G/ENV/UP)
U.S. Agency for International Development
Washington, DC 20523

Presentation for Ghana Housing Finance Conference - December 1997

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Housing finance is all about getting money to people who want to build or buy housing. This conference has already focused on many parts of this process, including the collection of the funds from the savers in the economy, such as bank deposits, life insurance premiums, and pension savings. We have also looked at the institutional structures that might be used to pass on those funds from their initial repository to an entity that is actually in a position to make housing loans.

Finally, the funds are about to be put into the hands of the household and, soon thereafter, the funds will begin their journey back through the system and into the hands of the savers. Now it s time to look more closely at exactly how and when do we expect the borrower to return those funds. In other words, what are the terms and conditions of the loan contract?

This subject is critical for a number of reasons. First, because there is really a wide range of choices with respect to the repayment arrangements. Second, because picking the right arrangement is a life-or-death matter for the financial health of both the borrower and the lender.

In fact, the two most important criteria for designing a mortgage are:

The risks to the borrower. Will the borrower be able to meet those terms? Even lenders operating in systems that are very efficient and even callous about foreclosing and evicting defaulters would rather not have to do that.

The risks to the lender/investor. Will these cash flows from the borrower allow the lender to meet the lender s repayment requirements? Otherwise it may be the lender that is being foreclosed on. Will the ultimate investor receive a competitive market return?

Once having met requirements 1 and 2 in a most basic way, lenders and borrowers can move on to the third most important criterion in mortgage design.

Affordability. Essentially, how can the terms be constructed to allow the borrower to borrow the most while still meeting basic requirements 1 and 2?

It s not good enough that a loan is safe for the borrower and lender. It has to be affordable to attract customers. In a competitive mortgage market, the best way to get business is to make as large a loan as possible.

Finally, there is a fourth criterion for a successful mortgage design. It is one that is not talked about explicitly a lot, but is a real limitation on the system.

Simplicity. This is the degree to which the borrower and even the lender fully understand the deal that they are making. And that is a function of the simplicity of the loan terms.

I am supposed to provide an overview on designing mortgages. I have given you what I feel are the four criteria to judge a mortgage design. I could now move on to developing a matrix of design elements, including inflation, real interest rates, real wages, and maturity structures. And we will do some of that. But, in my experience, such a discussion can quickly become confusing for people not deeply familiar with the economics and finance of complex repayment streams.

So I will try instead to first just convince you that it is worth the effort to thoroughly explore all the options. And try to open your mind to the possibilities by looking at two extreme cases.

Let me start with what I think is a basic, but unheard of, reference case. That case is this: the borrower gets the money now and agrees to pay it back with interest (calculated at either a fixed or floating rate, real or nominal) all at one time sometime in the future.

Diagram # 1: dashed line connecting loan amount and repayment amount

Does this sound sort of reasonable or unreasonable? In any case, have you actually ever heard about mortgages being done this way? Why not?

Why don t lenders just say, go away and don t bother us for 5 years, but then you had better have the principal plus the compound interest in your hands or we ll take your house away from you. It seems a lot easier, no servicing costs, and the borrower can save up to repay the lender according to the times and circumstances that best suit his or her situation.

So how does it stack up to our criteria? Well, it s simple, so does well by # 4. It s affordable and in a way low risk, because it gives the borrower the maximum flexibility to pay off the loan. In a perfect world, such flexibility could only make it more likely that the loan would be repaid.

But in the real world, it s murder on the risks of repayment and particularly on the risks to the lender.

I imagine that such a loan would not only greatly scare the lender but also the household. Most people do not trust themselves to have the discipline to balance all the competing demands on the household budget each month and to put aside an amount that could easily be quarter to a half of their total income over the 5 years.

Why do I even bring up such a option? Because it represents an extreme.

What is the opposite extreme? I consider the opposite extreme to be having repayments being even and fixed over the full term. I.E., your classic level payment, fixed rate mortgage.

Diagram # 2: Level nominal payment mortgage.

Notice that I call this an extreme design. Yet I think that most people would consider this to be the base case for mortgage design, the one against which all other designs are viewed as alternative , i.e., something other than a constant payment over the full term.

How does this rank? It certainly is simple. It also minimizes the potential for surprising changes in repayments, both from the viewpoint of the borrower and the lender. But in fact, it is pretty weak in a lot of ways: risk of rates rising for the lender, risk of rates falling for the borrower, and, under many circumstances, absolutely terrible affordability.

Now in fact, one rarely sees exactly this loan design. That is because borrowers are not willing to sign away the potential to prepay if rates fall. So what is generally called fixed rate financing is actually fixed only if rates do not go down, and is in fact variable rate lending if rates do go down.

Borrowers in the United States generally take this approach to housing loans. What is not always recognized is that they are giving up something in return for this simplicity. They are giving up the possibility of borrowing more or paying a lower rate, i.e., Criterion 3. They could borrow more if they took out loans where the repayment increased over time with inflation. And they could borrow more or pay less if they would take on the risk of variable interest rates or even just give up the right to pay-off the loan early if market rates go down. But, no, most US borrowers are unwilling to give up on simplicity, even if it would allow them to borrow about 20 percent extra.

My guess is that people in most countries would agree with them. They also would like to have level-payment mortgages. But taking that approach in almost any other country would mean that Criterion # 2 would be broken, i.e., the lenders would be exposing themselves to bankruptcy, and Criterion # 3 could also be obliterated, if inflation is less than minimal. The risks to the lender are obvious even in the US case, where most of the Savings and Loan sector nearly collapsed because they had made loans where the repayments, interest rates, and loan maturity were fixed and constant. They did this with the blessing and strong encouragement of the US government. Why? Because the public wanted it. Why? Because of simplicity.

Fortunately for the US borrowers, new ways have been found to more cheaply and safely finance this addiction to long-term fixed-rate loans.

But most other countries rely on loans where the rate changes, at least every few years, according to the market or according to the inflation rate. In countries with high inflation, it is the spread over the inflation rate that is specified or maybe even this real interest rate is itself allowed to vary over time.

Why does this happen? Countries give up on the long-term fixed payment loan because it is impossible to meet Criteria 2 and 3 with that design. Certainly, variability in interest rates is critical for the financial health of depository institutions if they are to make loans with money

held on short-term deposit with them. If they did not do this or if they raised funds by selling long-term bonds, they would have to charge much higher rates to cover the risk of a future run-up in market rates, so it is also Criterion # 3, the desire to borrow more, that is also kicking in.

What is losing out is Criterion # 1, the risk that the borrower will default, and Criterion # 4, the simplicity of the system. But in most cases, the risks to the borrower are manageable and also all participants learn over time how a variable rate loan works.

So clearly neither of the two simple extremes, a single payment at maturity or a constant payment over a fixed term, fits most of the world. I have already mentioned three of the modifications that are commonly employed, having variable nominal rates of interest, a fixed real interest rate on top of whatever inflation is, or a variable real interest rate.

That s the easy stuff. Sure, it does take some effort to start thinking in terms of real interest rates or wondering about where nominal interest rates may be going to in the future. But the fact is that many developing countries can not afford to settle for thinking things out only so far. They may have real interest rates that are more volatile than nominal interest rates are in developed countries. Real wages may also be very volatile, as may real house prices. They may also need to tap international capital markets for funds, in which case they have to worry about future swings in their exchange rate.

These facts of life can make relatively simple alternative mortgages, such as a price-level adjusted mortgage, or PLAM, or mortgages made in US$ s or German marks, a risky business. So further thinking and tinkering is needed.

Let me illustrate my point by reference to Ghana. In the last 10 years, Ghana has seen very high inflation and reasonably low inflation, very high real interest rates and very low real interest rates. It has sometimes seen steady improvements in real incomes and also declines in real incomes, sometimes just temporarily, until wages caught up with inflation, and sometimes persistently, as structural economic adjustments played themselves out.

This is a very difficult environment for making large long-term loans to consumers. The cost of money is very volatile and the ability to repay the loan, i.e., the real income of the household, is also uncertain.

One is tempted to just say, Forget it, it s impossible or The government needs to step in and provide low-rate loans and take all of the risks. But these are very unattractive alternatives. I don t need to go into the horror stories that result from governments trying to do housing finance all by themselves. But I also don t think it s realistic to simply give up, not without applying as much ingenuity as possible and maybe a small dose of government assistance.

That s what the HFC has been doing for 5 years now. I see it as a textbook case of creating a mortgage design that attempts to balance all of these competing criteria. The interest rate was

fixed in real terms, thereby providing some assurance to the borrower and the investor that future swings in real rates would be buffered against. The borrower also was assured that the impact of the inevitable swings in real wages would also be buffered against by allowing the borrower to maintain the repayment as a constant 25 percent of his or her actual income.

Now let me return to the general discussion of alternative mortgage designs. What are the basic building blocks for designing an alternative mortgage? There are three major decision parameters:

Making the level of repayment adjust for interest rates, inflation, exchange rates, wage rates, or actual household income.

Making the principal amount due a function of market interest rates (nominal or real) or exchange rates.

Making the term of the loan adjustable.

These parameters can be mixed and matched in a lot of different ways, with a lot of consequences for all four of our criteria: the risks that the borrower and lender face, for how much the borrower can borrow, and how well the borrower and lender really understand what they are getting into.

Let me briefly illustrate the process. The classic fixed-rate level payment loan has a repayment that is not adjusted for inflation or anything else, has a declining burden on household incomes, is independent of trends in market interest rates (except downwardly), and has a fixed term. Great if inflation is less than 5 percent and loans are funded by investors who want to lock in interest rates. If inflation is over 20 percent, and loans are funded by bank deposits, it s pretty much impossible.

The classic variable rate loan has a repayment that varies with market interest rates, a burden on the household that varies with market interest rates, but a principal balance and term to maturity that are fixed. Sort of stupid in a lot of ways, with lots more risks on the borrower. Maybe acceptable in an EU country, but not one where rates can swing from 10 percent to 30 or 50 percent.

The Ghanaian loan is not explicitly adjusted for inflation but does maintain a constant burden on the borrower s income, and so varies with inflation to the extent that incomes change with inflation. It has an applicable interest rate that is a constant spread over inflation; thus the principal due will vary according to how the principal due changes relative to repayment due. If the changes differ, the term of the loan adjusts (at least up to a point).

It can be tinkered with. The real interest rate can be made to follow the market. The real burden on the borrowers income can be made to fall over time. The original term can be shortened, and thus the ability to extend the term can be increased.

Maybe not perfect, with a variety of risks, but at least serviceable in Ghana and something like it is really applicable to many developing countries. But definitely not simple. So Criterion #4 is sacrificed for Criterion #1 and Criterion #3.

Let me point out an irony of this design. Notice that in nominal terms, this scheme is actually closer to the first base case, where all repayments are bunched into the last month, than the other extreme, where payments are spread out at a constant and fixed nominal rate. So maybe it s in fact useful to think over the full range of ways to structure loans.

I will give the floor to Loic Chiquier to explore in more detail the workings of some such alternative mortgage designs. But I did want to first stretch your minds some to see that creativity in design can make substantial contributions to what really matters, giving more households the ability to get funds for housing themselves and on terms that do not leave a bitter taste for them or their lenders.